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HUMAN FACTORS IN DEVELOPMENT TEAM**

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AGILE TRANSITION MODEL BASED ON HUMAN FACTORS IN
DEVELOPMENT TEAM

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A thesis is submitted in fulfillment of the
requirements for the award of the degree of
Master of Philosophy

School of Computing
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SEPTEMBER 2018

I declare that this thesis entitled “*Agile Transition Model Based on Human Factors in Development Team*” is the result of my own research except as cited in the references. This thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date : SEPTEMBER 20TH, 2018

To my beloved parents,

Zainal Abidin Abdul Hamid and Rosma Shabudin,

Thank you for the love, encouragement and prayers of day and night.

To my one and only sister,

Faten Nabila Zainal Abidin,

You have been my inspiration, and soul mate.

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ABSTRACT

Nowadays, replacing traditional software development methods with agile methods has been considered as a critical decision. By adopting agile transition, organisations can respond to market changes rapidly, deliver higher quality software, and gain a significant competitive edge. However, some of the transitions are failing. According to existing studies, the challenges discovered from agile transition failure are from humans. Meanwhile, having a proper adoption plan of agile transition is important in order to ensure the success of the adoption. Based on the agile transition models identified in the existing studies, none of the attributes of the available models are relevant to an agile transition environment. In order to prevent the delay or failure of agile transition, an Agile Transition Model (ATM) related to humans was developed. The attributes of the model were developed according to the challenges in agile transition to ensure it is relevant in an agile environment. To validate the effectiveness of the model, each human factor included in the model was evaluated through a case study and survey. In order to ensure the newly developed ATM was validated in the agile transition period, the participants had to go through an agile transition period from the state of non-agile. A class of undergraduates was selected as participants of agile novices. Agile experts such as scrum masters and agile coaches were selected to validate each of the human factors in the newly proposed ATM as they experienced agile and understood the behaviour of an agile team. Therefore, through the evaluation, the relationship of each human factor with the delay of agile transition was discovered. Based on the result of the case study and expert opinions, ATM was refined. Human factors identified to have no relationship with agile transition from the case study and expert opinions were excluded from the ATM model. These factors were excluded as they did not affect agile transition negatively by proving a strong evidence of both methods.

ABSTRAK

Menggantikan kaedah pembangunan perisian tradisional dengan kaedah *agile* pada masa kini dianggap sebagai suatu keputusan kritikal. Dengan mengamalkan kaedah *agile*, organisasi boleh bertindak balas terhadap perubahan pasaran dengan cepat, memberikan perisian berkualiti tinggi, dan mendapat kelebihan daya saing yang ketara. Walau bagaimanapun, terdapat peralihan *agile* yang gagal. Menurut kajian, cabaran-cabaran yang dikenal pasti menyebabkan kegagalan berpunca daripada faktor manusia. Oleh itu, mempunyai perancangan yang sesuai dan tepat sebelum bertukar kepada kaedah *agile* adalah penting untuk memastikan kejayaan peralihan tersebut. Berdasarkan model *agile* sedia ada yang telah dikenal pasti, model-model tersebut tidak mempunyai sifat-sifat yang sesuai dengan persekitaran kaedah *agile*. Bagi mengelakkan kelewatan atau kegagalan peralihan kaedah *agile*, sebuah Model Peralihan *Agile* (ATM) dibangunkan. Atribut-atribut model dibangunkan mengikut cabaran dalam kaedah *agile* bagi memastikan kesesuaian dalam persekitaran kaedah *agile*. Bagi mengesahkan keberkesanan model, setiap faktor manusia di dalam model tersebut dinilai melalui kajian kes dan tinjauan. Untuk memastikan ATM yang baru dibangunkan disahkan dalam tempoh peralihan kaedah *agile*, peserta yang dipilih dalam penyelidikan ini perlu melalui tempoh peralihan kaedah *agile* dan tidak pernah mengamalkan kaedah *agile*. Sekumpulan mahasiswa dipilih sebagai peserta novis. Para pakar kaedah *agile* seperti Pakar Scrum dan Jurulatih *Agile* dipilih untuk mengesahkan setiap faktor manusia dalam ATM yang baru dicadangkan kerana mereka mempunyai pengalaman dan memahami kelakuan pasukan yang melalui proses kaedah *agile*. Oleh itu, melalui penilaian, hubungan setiap faktor manusia dengan kegagalan kaedah *agile* ditemui. Berdasarkan hasil kajian kes dan tinjauan, ATM telah diperhalusi. Faktor manusia yang dikenal pasti tidak mempunyai hubungan dengan peralihan *agile* daripada kajian kes dan tinjauan dikecualikan daripada model ATM. Faktor-faktor ini dikecualikan kerana tidak mempengaruhi peralihan *agile* secara negatif dengan menunjukkan bukti kukuh daripada kedua-dua kaedah tersebut.

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